



WALKING FOOT SEWING MACHINE

USER MANUAL

Unpacking and Setting Up Your Strongarm Sewing Machine.

Remove the tools and accessory box and the thread stand that are taped to the foam packing surrounding the sewing machine.

Fit the base to the machine. It's a job best done by two people, or by laying the machine on the edge of a table. The base has two pins that insert into two holes on the back of the sewing machine.

Slide the two pins on the base into the holes in the back of the sewing machine. The two holes have small screws on their underside that may need to be loosened using the screw driver supplied in the tools and accessory case. Once the pins are located in the holes, tighten the screws to secure the base to the machine. The base can now be swung under the machine. If the base doesn't line up properly, loosen the screws to adjust the position of the base, then re-tighten.

There is a small tab on the front right of the sewing machine that locks the base in place.

Please retain the original foam and cardboard shipping container. You'll need it if you ever need to transport the machine or return it for service

Tools and Accessories Case

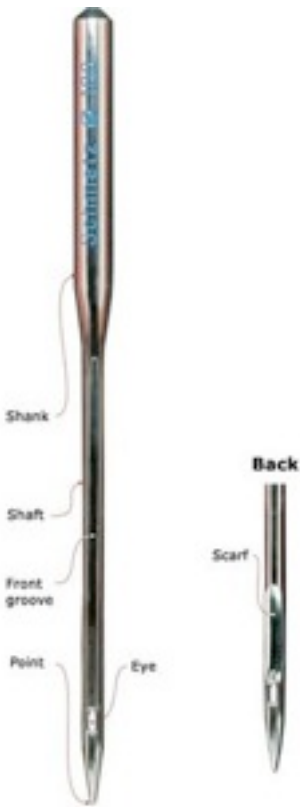
Inside the tools and accessory case you'll find the thread post. It's a small silver rod about 5cm long with two holes.

The thread post screws onto the top of the machine just in front of the carry handle.

The thread stand is taped to the foam packaging. To assemble, screw the smaller rod into the centre of the base. Loosen the small screw on the side with the supplied screwdriver. Insert the thread guide into the hole and then tighten the screw.

Inserting Needles

INCORRECTLY INSERTED NEEDLES ARE THE NUMBER ONE CAUSE OF SEWING PROBLEMS. PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY, AND RE-READ THEM IF THE SEWING MACHINE IS FAILING TO MAKE A STITCH.



The Strongarm 2000U-33 comes with a size 20 (*metric 125*) sharp point needle fitted.

Three spare needles are included in the tools and accessory case.

Unlike domestic sewing needles, industrial needles have a round shank and can very easily be inserted the wrong way.

If you look closely at the needle, you will notice the needle has two sides. One side has a groove that runs from the eye to the shank. The other side has a smaller indent just above the eye, called a scarf.

Now look at the needle fitted to the sewing machine. Notice the long groove faces outwards, or to the left as you face the sewing machine.

To insert a needle, loosen the small screw on the needle bar of the sewing machine that secures the needle. Remove the old needle.



Insert the new needle with the long groove facing outwards, or to the left as you face the machine. Slide it all the way in, then tighten the small screw to secure the needle.

IT'S NOT HARD TO INSERT THE NEEDLE CORRECTLY, BUT IF IT ISN'T INSERTED CORRECTLY, THE MACHINE WILL SKIP STITCHES, BREAK THREAD OR BREAK NEEDLES.

Threading up the machine



1. Place the spool of thread on the thread stand behind the machine. Run thread up through the arm of the thread stand.



2. Run the thread through the pigtail next to the bobbin tensioner.



3. Run the thread down, up, then down through the three holes in the thread guide.



4. Lift up the foot-lift on the top left of the machine. This releases the tension on the thread tension disk.



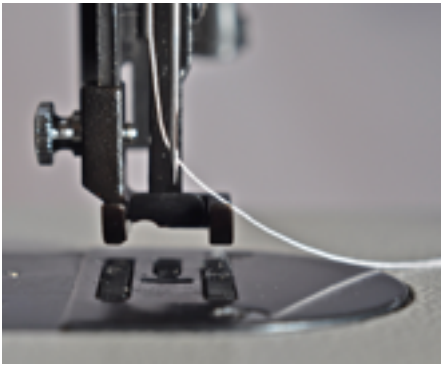
5. Run the thread under the tension discs and up underneath the thread spring. If you remove the lid, you will see two grooves, make sure the thread goes around the groove closest to the machine, not the outer groove.



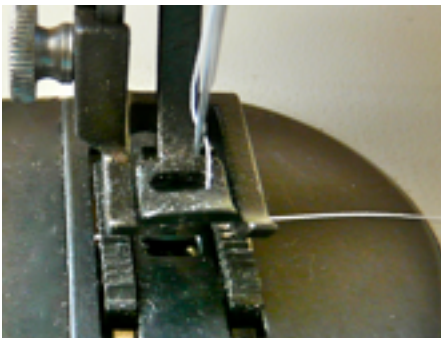
6. Thread the eye in the take up arm from right to left.



7. Run the thread through the hole on the front of the needle bar, above the needle.



8. Thread the needle from left to right.



9. Slide the thread through the hole in the walking foot, and then pull through about 10cm of thread.



This picture shows the correctly threaded machine.

Winding, threading and inserting the bobbin

Your Strongarm Sewing machine comes with a small amount of thread fitted to the bobbin. This was used to test, or “sew off” the machine. You’ll need to wind thread onto the bobbin before you start sewing.

To wind a bobbin

1. Place a bobbin on the bobbin winder on the top right of the machine.



1. Run the thread from the thread stand arm through the top hole in the bobbin post, from right to left.



2. Run the thread around the bobbin tensioner next to the pig tail.



3. Run the thread back again through the lower hole in the bobbin post this time

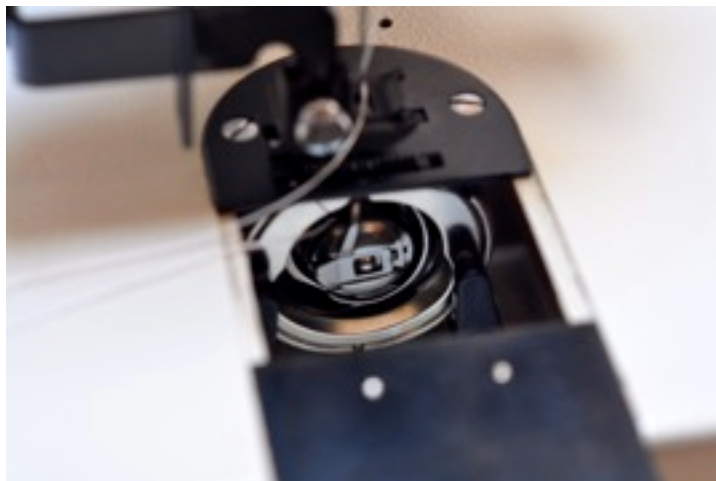


4. Bring the thread under and up through one of the holes on the higher side of the empty bobbin and hold the end of the thread to give a small amount of tension.
5. Click the bobbin to the right
6. Press the foot pedal to wind the thread onto the bobbin.

The bobbin will automatically stop winding when it is full. If you're doing a big job, it's a good idea to wind all bobbins before you start to save unthreading the machine. Best of all is to have two spools of thread, one for sewing and the other for winding bobbins as you sew. This will require the purchase of a second thread stand.

Removing and installing the bobbin

The bobbin can be accessed through the machine's black sliding cover plate to the left of the needle.



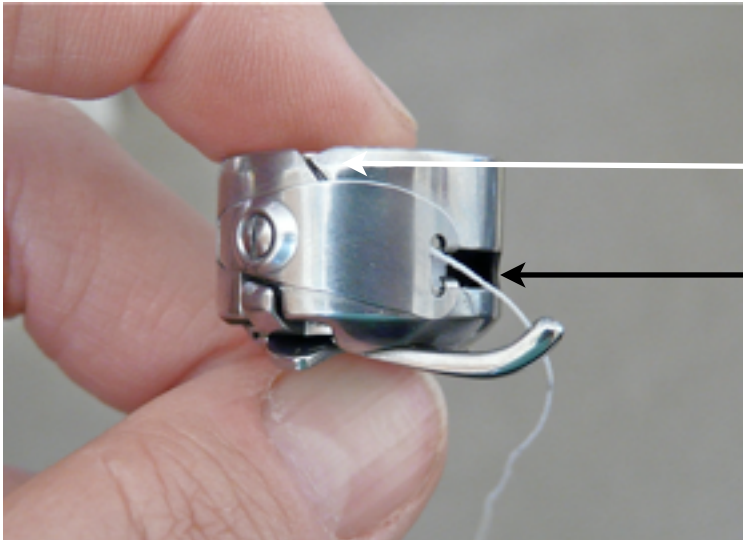
Removing the bobbin case

Slide the cover-plate to your left and grab the small lever on the bobbin with your thumb and forefinger.

Pull the bobbin case out from the machine. You'll notice with the lever out, the bobbin is captive inside the bobbin case.

Once you release the lever, the bobbin is free to be removed from the bobbin case.

Threading the Bobbin Case.



With a few cm of thread hanging loose, place the bobbin in the bobbin case.

Slide the thread through the slit in the side of the bobbin case.

Run the thread under the tension plate to the notch in the top centre of the bobbin case.

Pull out 10 or so cm of thread.

To install the bobbin case.

With the case threaded, hold the bobbin case by the lever to prevent the bobbin falling out, and insert onto the axle of the shuttle. Keep the lever horizontal and the finger vertical.

Release the lever and push the bobbin case into the shuttle. You'll feel the bobbin case click in place.

To pick up the bobbin thread

Raise the foot bar using the lever on the top of the machine.

With the needle thread held in your left hand, turn the balance wheel towards you (from the top) until the needle goes through one full revolution and finishes in its highest position.

The needle thread will now be looped around the bobbin.

Pull the needle thread gently to pull up the bobbin thread.

Fish out both threads using a flat object such as a pair of small scissors and pass at least 10 cm of thread behind the foot. Make sure the needle thread is running through the hole in the centre of the walking foot.

Sewing.

With the machine fully threaded, lift the foot using the lever on top of the machine and place some fabric under the foot.

Make sure at least 10 cm of both the needle thread and the bobbin thread are behind the foot.

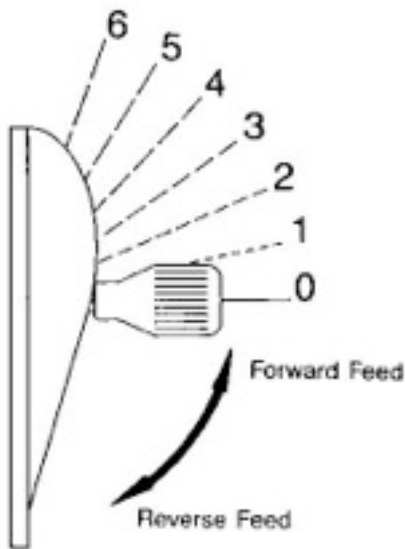
Hold the thread ends lightly behind the foot and begin sewing, releasing the thread as the machine starts to sew.

Holding the thread out of the way prevents the stray thread being sewn over.

Never sew without fabric under the machine as the thread may jam, causing damage to the machine.

Adjusting The Stitch.

The Strongarm Sewing machine stitches both straight and zig zag, with stitches up to 6mm long and zig zag up to 4 mm wide.



To adjust stitch length, lift the stitch length lever up and down. All the way up is 6mm. ½ the way up is 0mm and reverse is all the way down.



The zig zag lever adjusts the width of the stitch. All the way to the right is 0, or straight stitch, and all the way to the left is 4mm. Make sure the needle is out of the fabric when adjusting needle width as this could bend the needle.

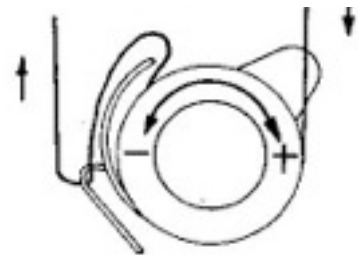


When set to straight stitch, the needle position lever sets the needle to a left, right and centered position. This is useful when sewing very close to features such as zippers. Push the lever down slightly in order to change position.

Make sure the needle is clear of the fabric when adjusting the needle position as this operation could bend the needle.

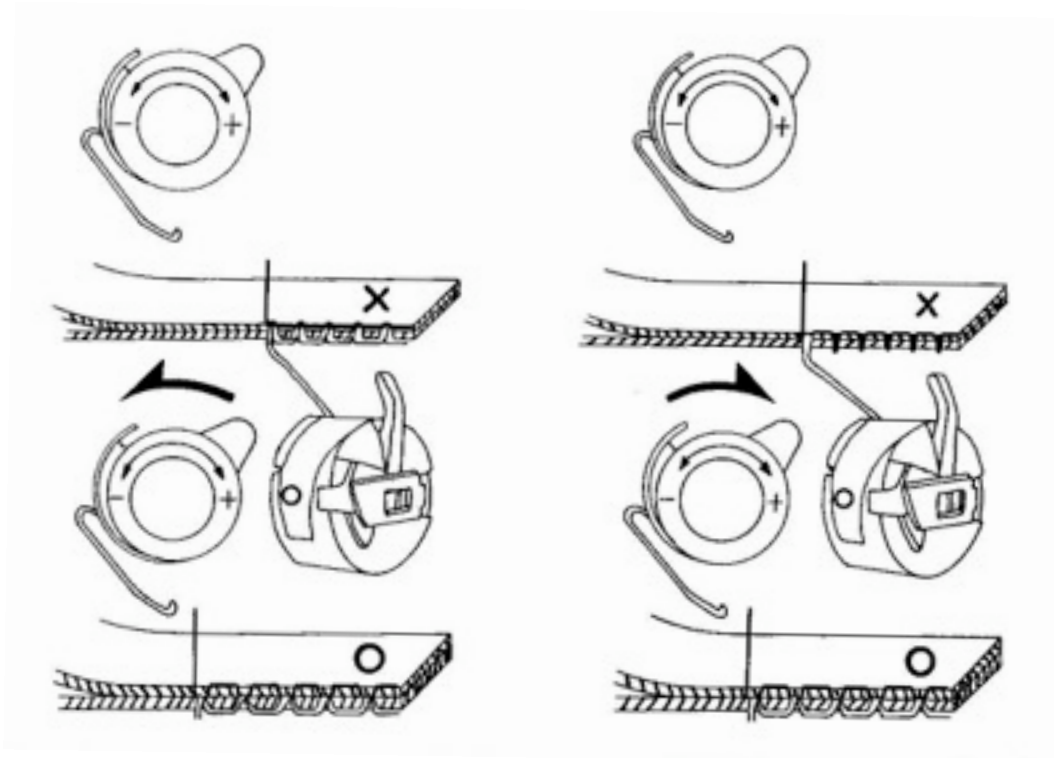
Setting The Tension.

Your Strongarm Sewing machine is factory pre-set to an average tension that should work on most canvas applications. A little tension adjustment goes a long way, so only make small adjustments at a time.

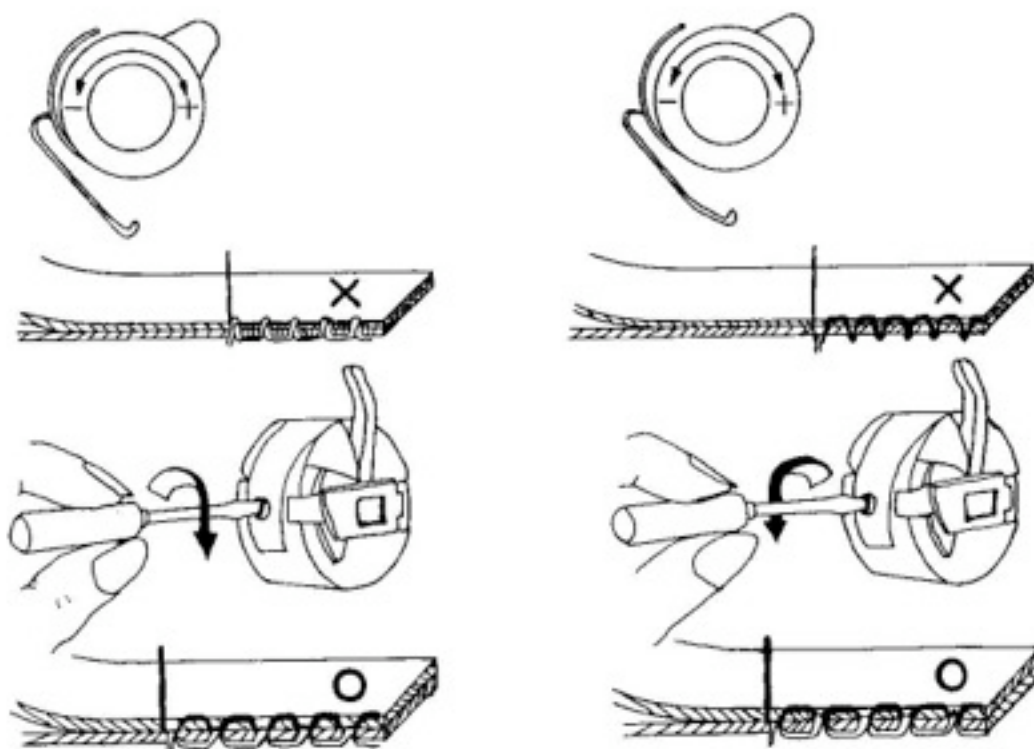


As a general rule, the thicker the fabric, the higher the tension must be to lift the lower thread up to the middle of the layers of fabric and meet the top thread. Thick upholstery fabrics for example may require a higher tension setting and a longer stitch length and lighter fabrics may require a lower tension setting.

The goal of setting tension is to have the knot made by each stitch lie in the middle of the fabric and be no more visible on one side of the fabric than the other.



Tension can be set on the tension dial, as well as on a small screw on the bobbin. It is rare to need to adjust the bobbin tension. In general you'll only need to adjust it if you are sewing very fine fabrics with fine thread and small needles.



Adjusting Walking Foot Pressure.

Heavier fabric requires more foot pressure. This is applied by turning the knob on the top of the machine above the foot and next to the foot lift lever. Insufficient foot pressure is a common cause of dropped stitches when sewing thick fabric.



Changing Direction.

To change direction while sewing, stop the machine and then turn the wheel so the needle is in the fabric. Raise the walking foot using the foot lever and turn the fabric to face the new direction. Lower the foot and continue sewing.

Finishing A Row Of Stitches.

To finish, lock the stitches by reversing and then sewing forward again over the last centimeter of stitching. Move the wheel by hand so the needle is in the top position. Raise the foot and remove the fabric. Raising the foot also releases tension on the thread allowing you to remove your fabric. Cut the thread close to the fabric leaving at least 10cm of thread remaining in the machine.

Choosing the Right Needles.

The Strongarm 2000U-33 uses standard industrial walking foot needles.

The needle types or systems are called “135x17” for fabric needles, and “135x16” for leather needles. Quote those systems when you re-order needles.

Walking foot needles are available from Strongarm or from industrial sewing suppliers. They are generally not available from domestic sewing suppliers.

Needles are sized in both Metric and “Singer” sizes. Singer sizes are more common in the US, Metric in Britain and Australia.

The Strongarm sewing machine fits Singer size 12 to 23 needles which correspond to Metric sizes 80 to 140.

Needle And Thread Size Conversion Chart

Metric Size	Singer	Metric	US
60	7,8		
65	9		
70	10	140	V-20
75	11		
80	12	100	V-30
85	13		
90	14	60	V-45
95	15		
100	16		
110	18	40	V69
120	19		
125	20	30	V92
130	21		
140	22	20	V138
150			
160	23		
180	24		
200	25		

Choosing The Right Thread

For outdoor applications such as sails and canvas, Strongarm recommends a bonded polyester UV resistant thread such as Coates Dabond.

For Upholstery, bonded Nylon or clear monofilament threads are recommended.

Matching Fabric To Needles And Thread

For your machine to work properly, it is important to match your fabric with the correct needle and thread. The following chart gives general guidelines-

Strongarm recommends

Schmetz Sharp point (regular) needles

For canvas sewing

Schmetz DI Needles-

For thick leather

Schmetz SD1 Needles-

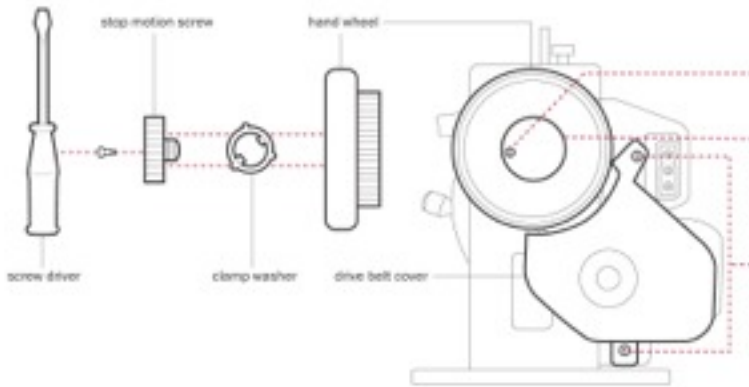
For leather and sailcloth

Schmetz Serv7 Needles-

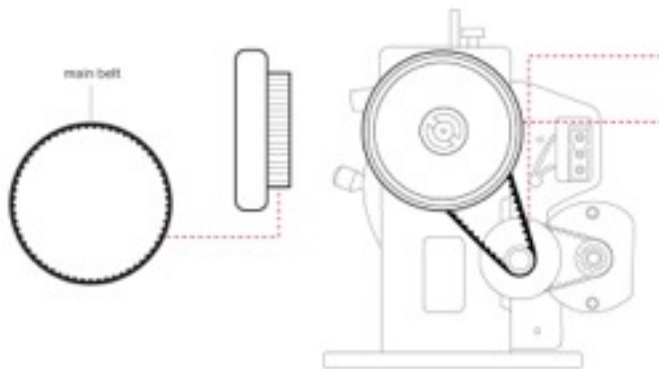
For heavy and hard to sew fabrics.

Fabric	Needle Point	Needle Size-Singer	Needle size-Metric	Thread Type	Thread Weight-US	Thread Weight-Metric
Sunbrella canvas	Standard	18-22	110-140	Bonded polyester	V69-V92	40-30
Dacron sailcloth-light	Standard	16-18	100-110	Bonded polyester	V69	40
Dacron sailcloth-heavy	Heavy Duty	20-22	125-140	Bonded polyester	V92, V138	30-20
Soft light leather	Leather	16-22	100-140	Bonded polyester	V69-V138	40-20
Dry and thick leather	Leather	22	140	Bonded polyester	V92- V138	30-20
Spinnaker cloth < .75 ounce	Standard	12	80	Bonded polyester	V30, V46	40-60
Spinnaker cloth 1.5 ounce	Standard	16	100	Bonded polyester	V46	60
Upholstery Fabric	Standard, Heavy Duty	16-22	100-140	Bonded Nylon, Monofilament	V69-V138	40-20
Motor Trimming Vinyl	Heavy Duty	20-22	125-140	Bonded Nylon	V96-V138	30-20

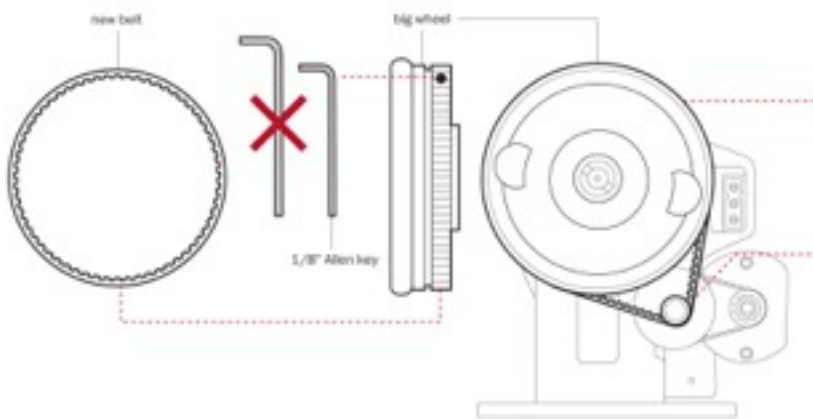
How To Mount The Powerwheel



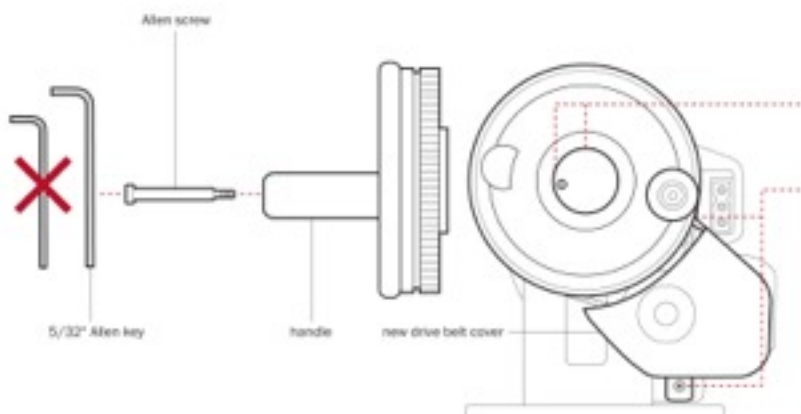
1. Unscrew and remove the stop motion stop screw with a screwdriver
2. By hand, unscrew and remove the stop motion screw
3. Remove clamp washer from under the stop motion screw
4. Remove the drive belt cover held by two screws.



5. Remove longer main belt, turn hand wheel to assist removal.
6. Remove the hand wheel, wheel slides off.



7. Install the Powerwheel on the end of the shaft making sure that the teeth on the wheel are facing the sewing machine
8. On the Powerwheel there are two small holes, under the belt on the bevelled side. Insert the two grub screws into the holes, and tighten using the 1/8" Allen key provided.
9. Install the new drive belt. Slip the drive belt over the Powerwheel first and then slip the belt over the small idle pulley at the back.



10. Put back in place the stop motion screw and clamp motion washer. Put back in place the stop motion clamp stop screw.
11. Put the new belt cover on with two screws.
12. For hand crank only, install the handle to the Powerwheel by tightening the Allen screw with the 5/32" Allen key provided.

Troubleshooting

What do I check when the thread breaks?

Make sure the machine is threaded correctly.
Check the thread section of this manual to make sure you're using the right thread. For reliable sewing, use bonded polyester or bonded nylon.
Check for defective needle/needles (bent or blunt).
Make sure you are using the correct needle system, See the needle section in this manual.
Make sure you're using the right needle size for the thread- check needle size table.
Check thread tension. It could be too tight or too loose.
Check for sharp parts or edges on the cap spring.
Check to see if thread has jumped out from between the tension dial.
Is the sewing area very dirty? Remove needle plate and clean.
Check bobbin and bobbin case for damage, replace if needed.
Bobbin case may be very dirty; clean the inside of the bobbin case.

What do I check when the needles are breaking?

Select correct needle size for the type of work being done. Thick fabric needs bigger needles.
Make sure you are using the correct needle system. Try a Serv 7 needle.
Make sure the needle is inserted correctly.
Check pressure foot is inserted correctly, and lined up with needle hole.
Needles can break when changing the zig zag or needle position setting while the needle is in the fabric. Make sure to raise the needle when changing the zig zag or needle position setting.
Check machine timing.

Why are there are loops on the underside of the fabric?

This usually means there is insufficient needle thread (top thread) tension. This is often because the foot has not been lowered when sewing thick assemblies. It can also be because the needle thread is not seated between the tension discs.

What do I check for skipped stitches?

Select correct needle size for the type of work being done.
Make sure the needle is inserted correctly.
Make sure you are using the correct needle system.
Make sure the machine is threaded correctly.
The foot pressure may not be sufficient. Thick or heavy fabric requires more foot pressure.
Check the cap spring for burrs.
Is the sewing area very dirty? Remove needle plate and clean.
Check bobbin case for defects, replace with new one.
Check the timing.

Why do three threads come up when I finish?

Multiple threads appear from the throat plate when the machine hasn't finished completing its stitch. Turn the balance wheel until the needle is in the vertical position to finish the stitch. Then remove the fabric and cut the threads.

Why does the thread pull out of the needle when I start to sew?

Make sure you have at least 10 cm of thread behind the needle when you start stitching.

How can I avoid oil stain on the material?

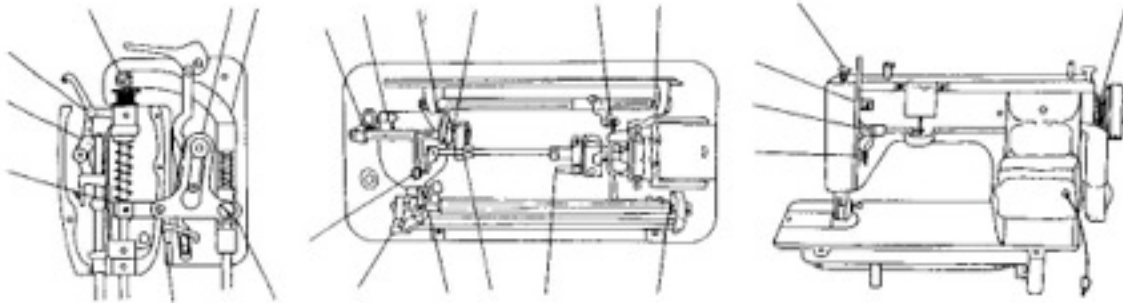
Using a piece of paper towel, clean around the needle and presser bar as often as needed. Remove the needle plate and wipe off any excess oil accumulated on the plate. Clean up oil soaked lint accumulated around the feed dog.

Quick Check Top Ten:

1. **Incorrect threading** – Thread and re-thread the machine and the bobbin and double check again, you may have over-looked the most simple step.
2. **Wrong Size Needle** – make sure you are using the right needle for the job and that it matches your thread and fabric. Skipped stitches will result if a needle too big or too small for the job.
3. **Damaged needles** – Change your needles regularly, especially after long periods of sewing. If in doubt, use a fresh needle and make sure the needle is inserted correctly.
4. **Thread and Needle Don't Match** - Your machine will strain to sew thicker thread with a small needle, check the needle chart.
5. **Not Enough Oil** - Make sure you apply it to the parts of your machine in order for your machine to run smoothly.
6. **Tension** - if the thread is not tight enough or too loose , your machine will not run smoothly. Check the tension is right on a scrap piece of fabric before you start. **Tip:** You may want write on the scrap of fabric, once you have it right, the tension, needle and thread for your future reference.
7. **Incorrect Thread** - You may be using incompatible thread. Tough fabric needs thread strong enough to cope with it. Remember the trifecta: fabric, needle and thread!
8. **Inferior Thread** – It may be cheap, but successful and durable sewing will arise from using good quality thread. Also sewing will be easier.
9. **Inferior Needles** – only use recommended needles for best results.
10. **Dirt in the Machine** –Cleaning the machine after each project is recommended for best results. Clean out the bobbin area, and feed dogs of all fuzz, thread and lint. Inspect your bobbin for burrs and defects and make certain that it is wound evenly.

Oiling and Care

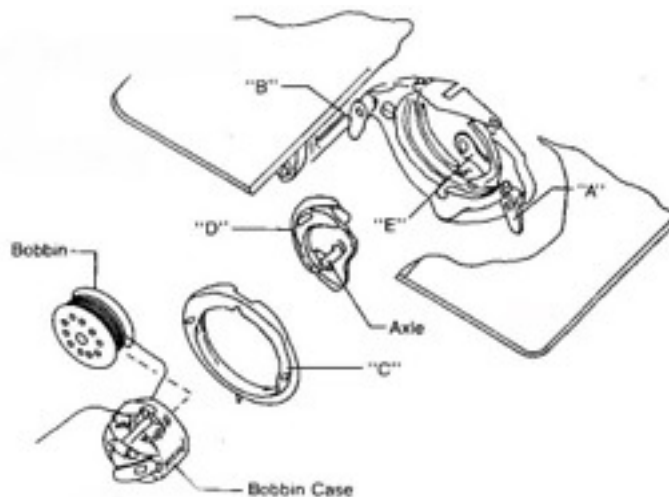
Your Strongarm 2000-U33 comes pre-oiled and ready to sew. The Strongarm is a precision tool, and the metal bearings will be “tight” straight from the factory. As the machine wears in, you’ll notice your Strongarm becomes quieter and the flywheel easier to turn by hand.



Oil your machine regularly for long service life. Oil once a week if used heavily. Use only sewing machine oil, and never use WD-40 or other lubricants.

To oil the machine, remove the top and side covers and oil all moving parts especially the metal bearings. Also tip the machine back from its cover and oil the bearings underneath. Be careful tipping the machine back- the Strongarm is heavy and it’s best to have the help of a second person.

Cleaning a Thread Jam

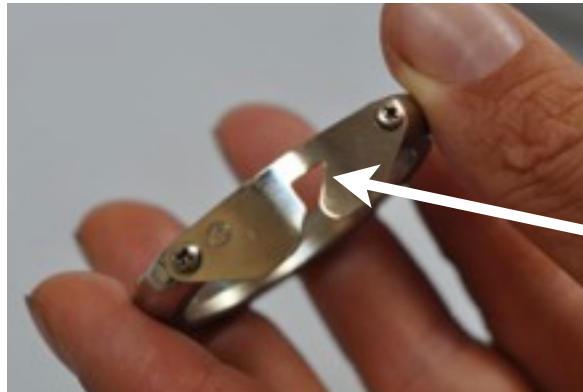


To clean a thread jam, you’ll need to disassemble the bobbin system. First, turn the balance wheel until the needle is at its highest point. Tilt the machine back and remove the bobbin case and bobbin. Turn the two small black levers (A and B) down and remove the bobbin retaining ring (C). Grab the hook (D) by its axle and remove.

Then you can remove any snagged thread using tweezers or your fingers. Use a small brush or compressed air to clean away any lint or dirt.

Checking and Repairing the Retaining Ring Cap Spring

At the top of the bobbin retaining ring, there is a curved plate with a roughly triangular slot called a retaining ring cap spring.



Inspect this slot for burrs

If the fabric moves while the needle is in the fabric, the needle can bend and strike the edge of the cap spring, causing a small burr, or rough edge. If the thread catches on this edge, the thread will fray, or the stitch will fail to form.

To repair the burr, remove the bobbin retaining ring and inspect the cap spring on the top of the ring. If there are any burrs on the spring, file them smooth with a small strip of sandpaper. Make sure you don't over-file the spring and create a sharp edge.

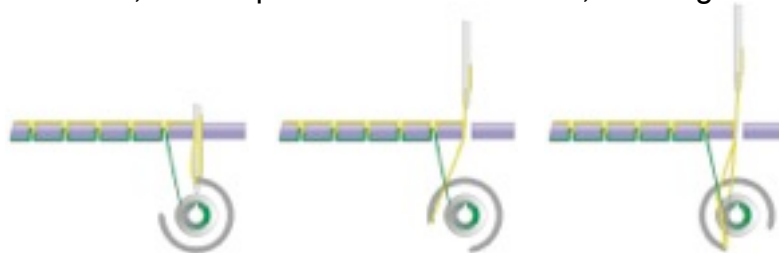
Measurement and Adjustment of Machine timing

Retiming your Strongarm sewing machine should only be considered after all other potential solutions have been tested. Please see the chapter on troubleshooting first. Make sure to change the needle, check for correct needle insertion and check the cap spring for burrs before considering retiming your machine.

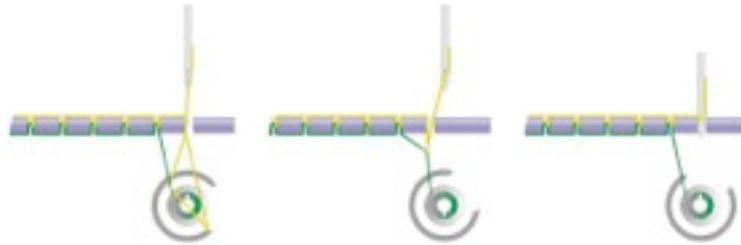
The Strongarm 2000U-33 is a robust machine, but occasionally a broken needle or a thread jam can knock the machine out of timing. Retiming a Strongarm sewing machine is a simple business, and can be performed by machine owners.

Before re-timing your machine, it's important to know how a sewing machine actually creates a stitch.

Underneath the machine, a rotating hook oscillates, or rotates back and forth around the bobbin. When the needle swings down towards the bobbin, the hook catches the thread from above the eye of the needle, and loops it around the bobbin, creating a knot, or a lockstitch.



For a stitch to form, the hook needs to swing past the needle just when the needle is coming up from its lowest point, and it needs to brush past the needle very closely.



Timing a sewing machine is all about lining up the needle and the hook so the hook can catch the thread and make the stitch.

There are three things to set, in order of importance-

1. How far down the needle travels, otherwise known as needle bar height;
2. How close the hook is set to brush past the needle, or left-right timing; and
3. How far around the hook is when the needle is all the way down, or rotational timing.

Re-setting the Needle Bar Height

If the needle on your Strongarm sewing machine hits a hard object such as a grommet or zip, or if you run into impenetrable fabric such as the reinforced ends of heavy sails, the needle bar may slip to prevent damage to the machine's gears. Fortunately re-setting the needle bar height is a simple job.

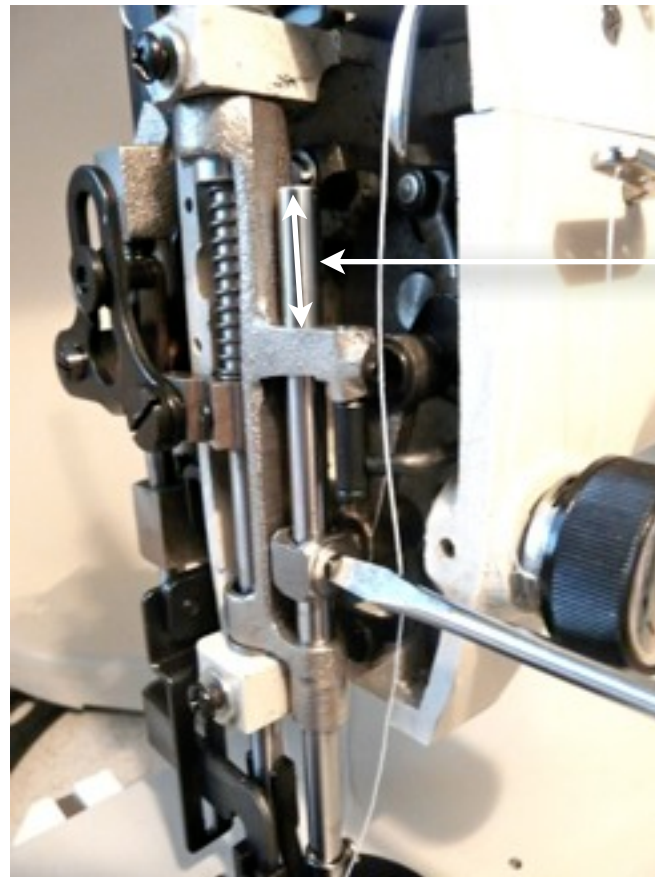
First, remove the end cover from the machine.

Then turn the balance wheel forward until the needle is at its **LOWEST** point.

To check the correct needle bar height, measure the distance between the top of the needle bar and the top of the needle bar support. The distance should be about 16mm.



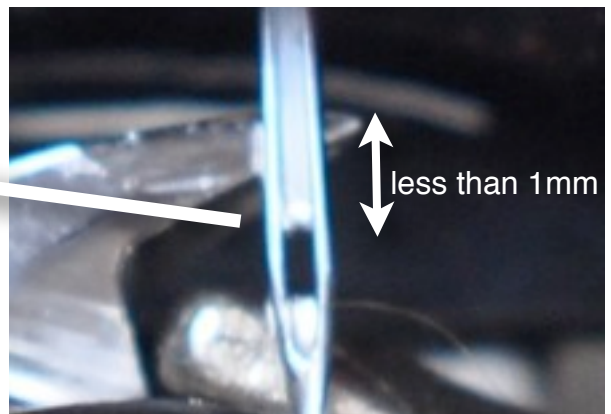
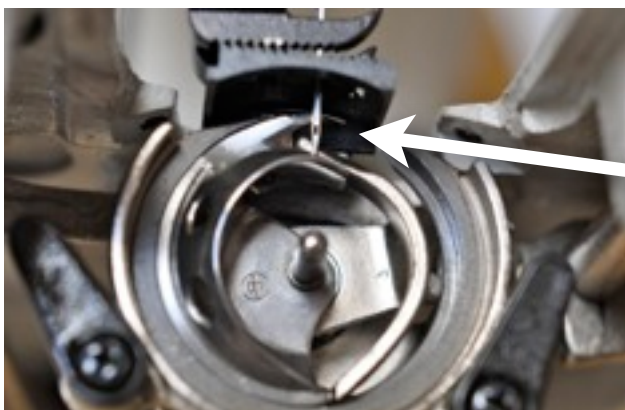
If the distance is out, then loosen the set screw on the drive collar using a small, high quality screwdriver, set the bar to 16mm, then tighten the set screw firmly. Make sure you don't rotate the needle bar as you adjust it.



distance should be
16-17mm

Remember the needle must be in its lowest position when you check the height.

Another way to check needle bar height is to put the machine on its back and remove the retaining ring from the bobbin system. Turn the balance wheel until **the needle is just coming up from its lowest point** and the tip of the hook is just in line with the needle. Now measure the distance between the top of the eye of the needle and the tip of the hook. The distance should be less than 1 mm.



less than 1mm

Left-Right Timing Measurement and Adjustment.

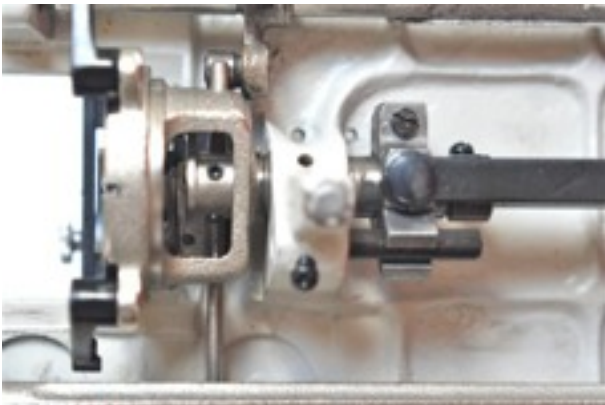
If you've eliminated every possible cause of dropped stitches, you've changed the needle, you've made sure the needle is inserted and threaded correctly, that you're using the correct needle and thread and that the cap spring doesn't have any burrs, then it's worth checking the left-right and rotational timing.

The shuttle timing rarely moves, so it's unlikely the timing will need to be re-set. Cotton jams and broken needles are the most common cause of shuttle timing issues. A few simple measurements will check the left-right and rotational timing.

First, set the machine to straight stitch, with the needle in the centre position. Turn the machine on its back. Remove the bobbin retaining ring and bobbin case. Now hold the hook in place while turning the balance wheel.

Using a flashlight, (a head mounted one is best) look at the hook as it sweeps past the needle. The hook should sweep past the needle on its right side (behind) without touching the needle. If the hook is too far away or on the wrong (left or in front) side of the needle, the hook will not be able to pick up the thread to make a stitch. You will need to adjust the shuttle to move the hook closer to the needle.

To adjust the left-right timing, turn the machine upside down and make a mark using a Sharpie or similar pen between the shuttle shaft and the bearing surface. That way, if the shuttle rotates as you move it in and out, you can easily re-align it.



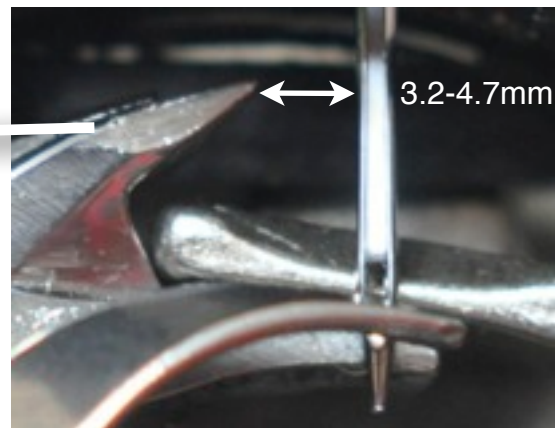
Then loosen the screw on the compressible clamp, which will free the shuttle. Small movements of the shuttle will move it left and right. Move the shuttle until the hook just brushes past the needle without touching. Then tighten up the clamp, ensuring the alignment mark you made with the pen still lines up.

Rotational Timing Measurement and Adjustment.

If the machine is still not sewing properly, check the rotational timing.

Set the machine to straight stitch, with the needle in the centre position. Place the machine on its back. Remove the bobbin retaining ring. Now turn the balance wheel until the needle is in its absolute lowest position.

The top of the hook should now be left of the needle by between 3.2 and 4.7 mm.



To adjust the rotational timing, you need to loosen the two set screws that lock the shuttle driver to the shaft.



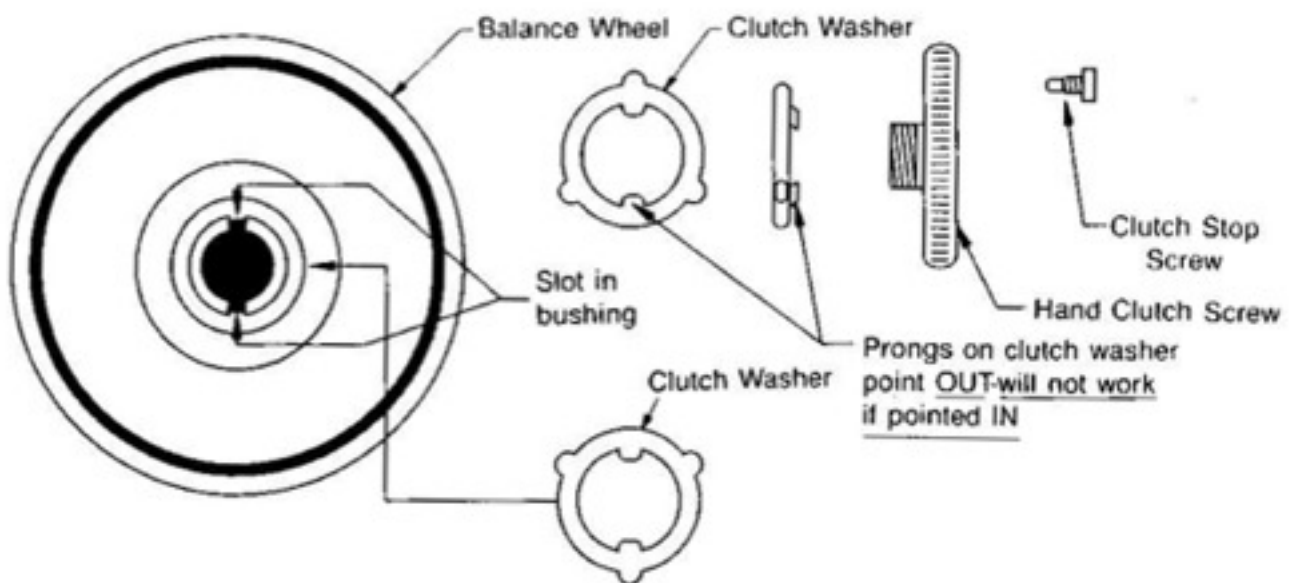
First note how far left and right the shuttle driver is fitted to the shaft. You want to adjust the rotational timing while keeping the driver from shifting left and right on the shaft.

Using a 2mm Allen key, undo the two set screws. You'll need to rotate the balance wheel after loosening the first screw to get at the second one.

Once the two screws have been loosened, rotate the driver so the hook sits left of the needle by 3.2 to 4.7mm, when the needle is in its lowest position.

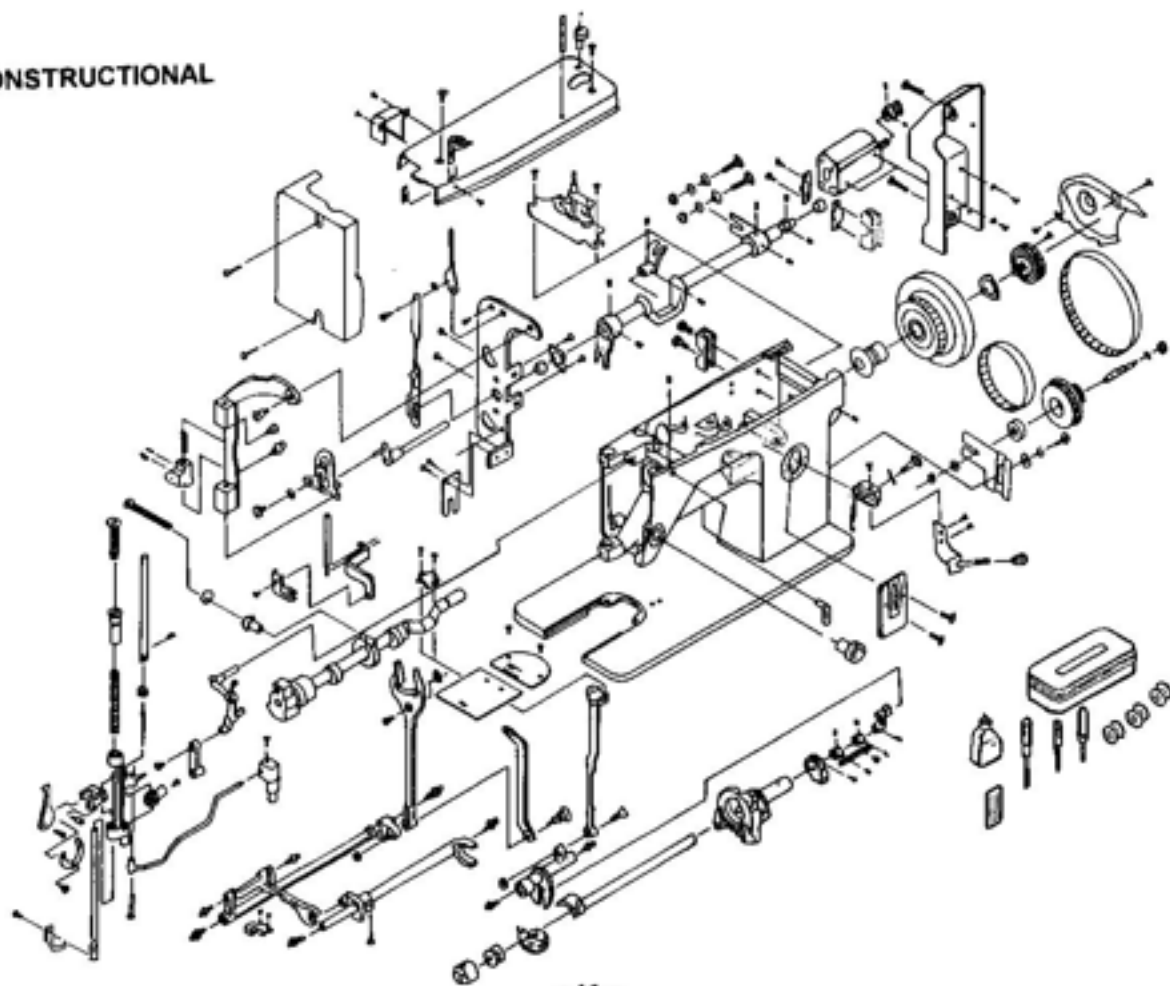
Once set, firmly re-tighten the two set screws, making sure the driver hasn't slipped up or down the shaft.

If the Balance wheel spins but the machine will not sew.

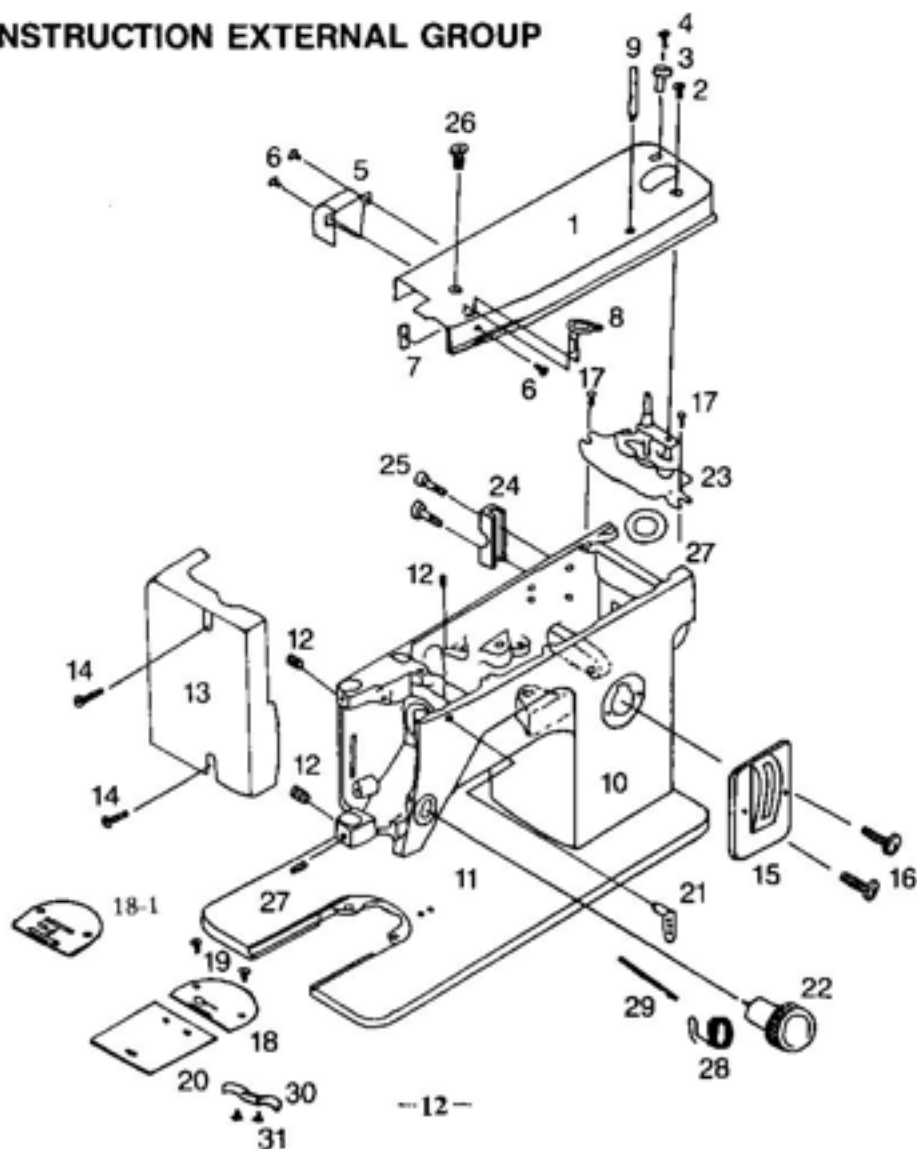


1. Remove Clutch Stop Screw
2. Remove Hand Clutch Screw
3. Notice position of prongs on Clutch Washer in slot of Balance Wheel Bushing
4. Remove Clutch Washer and make 1/2 turn and replace
5. Screw in Hand Clutch screw very tight
6. Screw in Stop Screw
7. Back off on Hand Clutch Screw
8. Run motor and check to see if Balance Wheel turns freely without running the machine
9. Tighten Hand Clutch Screw and the machine should run properly.

CONSTRUCTIONAL



GROUP 1 CONSTRUCTION EXTERNAL GROUP

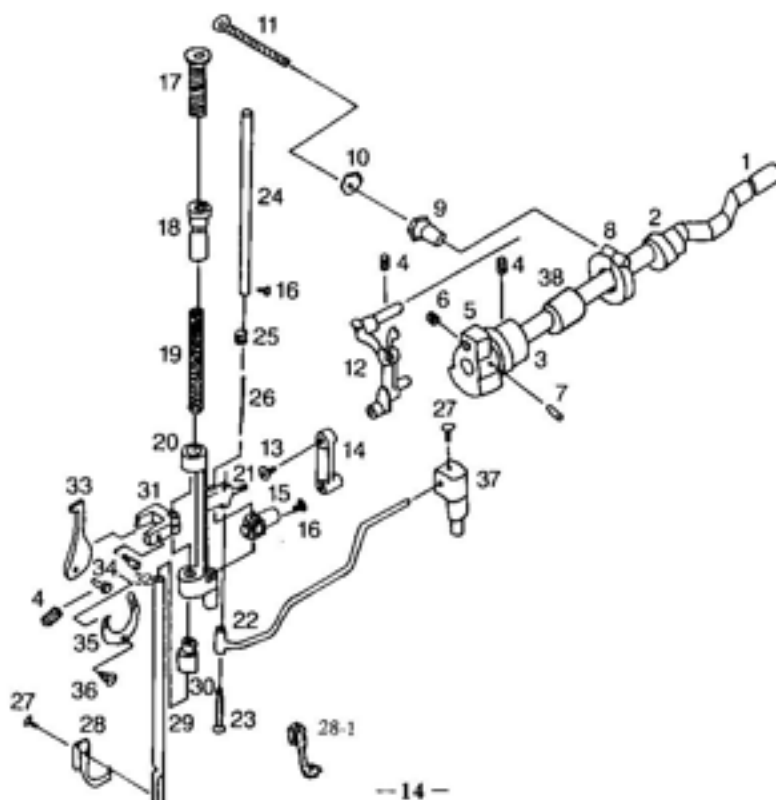


GROUP 1

KEY NO.	PART NO.	PART NAME	Q'TY
1	W047	TOP PLATE	1
2	B071	TOP PLATE SET SCREW	1
3	E066	BOBBIN WINDER STOPPER	1
4	E066-2	BOBBIN WINDER STOPPER SET SCREW	1
5	W047-1	SMALL PLATE COVER	1
6	A092	SMALL PLATE COVER SET SCREW	2
7	E070-1	BOBBIN WINDER TENSION ASSEMBLY SET NUT	1
8	E070	BOBBIN WINDER TENSION ASSEMBLY	1
9	W047-2	SPOOL PIN	1
10	W001	ARM BODY	1
11	W002	BED	1
12	D097	NEEDLE BAR SUPPORT SET SCREW	2
		THREE HOLE THREAD GUIDE SET SCREW	1
13	W048	FACE PLATE	1
14	C097	FACE PLATE SET SCREW	2
15	W125	STITCH LENGTH PLATE	1

16	A075	STITCH LENGTH PLATE SET SCREW	1
17	B010	BOBBIN WINDER SET SCREW	2
18	W032	NEEDLE PLATE	1
19	A052	NEEDLE PLATE SET SCREW	2
20	A048-B	SHUTTLE RACE SLIDE	1
21	W029	THREE HOLE THREAD GUIDE	1
22	W184-1	DIAL TENSION ASSEMBLY	1
23	W030	BOBBIN WINDER	1
24	W025	CRANK ROD BEARING SET BASE	1
25	W025-1	CRANK ROD BEARING SET BASE SET SCREW	2
26	E072	TOP PLATE SET SCREW	1
27	A117	BOBBIN WINDER RUBBER RING	1
28	W184-3	THREAD TAKE-UP CHECK-SPRING	1
29	W184-2	TENSION RELEASE PIN	1
30	A049	SHUTTLE RACE SLIDE SPRING	1
31	A050	SHUTTLE RACE SLIDE SPRING SET SCREW	1
18-1	W032-1	ZIG ZAG NEEDLE PLATE	1

GROUP 2 SEWING TRANSMISSION GROUP



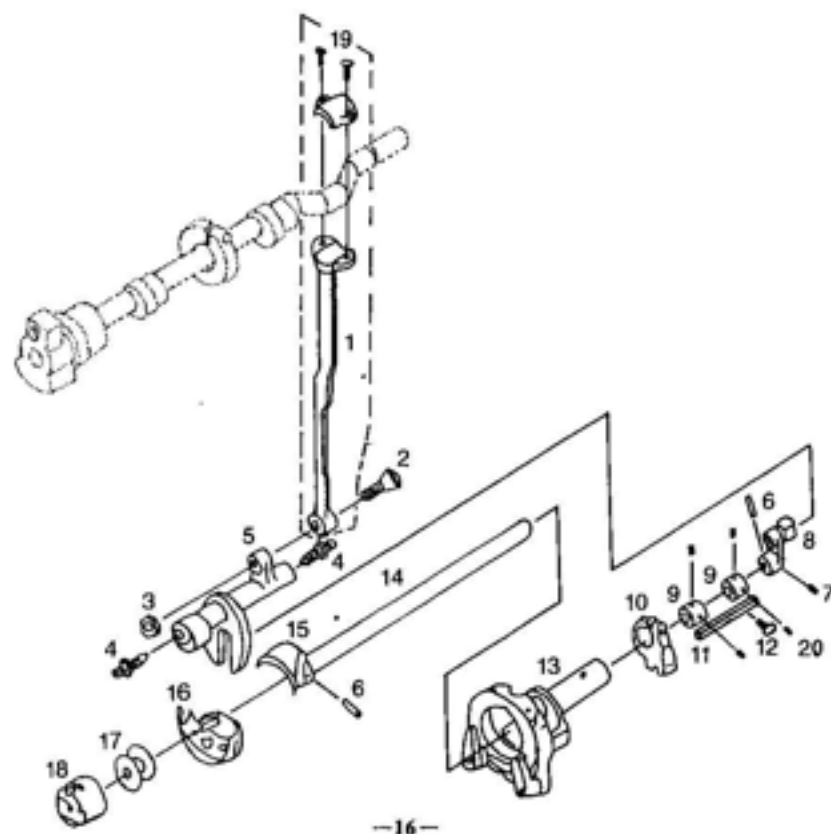
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GROUP 2

KEY NO.	PART NO.	PART NAME	Q'TY
1	E053	ARM SHAFT	1
2	B007	FEED CAM	2
3	B051	ARM SHAFT BUSHING	1
4	A012	THREAD TAKE-UP ASSEMBLY SET SCREW ARM SHAFT BUSHING SET SCREW TENSION RELEASE LEVER DRAG LINK PIN SET SCREW	1 1 1
5	B048	THREAD TAKE-UP LEVER CAM	1
6	A029	THREAD TAKE-UP ASSEMBLY SET SCREW	1
7	E048-1	THREAD TAKE-UP LEVER CAM SET PIN	1
8	W028-4	CRANK ROD LEVER CAM FOLLOWER	1
9	W028-2	CRANK ROD LEVER CAM FOLLOWER ADJUST NUT	1
10	W028-3	CRANK ROD LEVER CAM FOLLOWER LOCK SCREW	1
11	W028-1	CRANK ROD LEVER CAM FOLLOWER LOCK NUT	1
12	E020	THREAD TAKE-UP ASSEMBLY	1
13	E020-2	NEEDLE BAR CONNECTING ROD SET SCREW	1
14	B018	NEEDLE BAR CONNECTING ROD	1
15	A042	NEEDLE BAR CONNECTING STUD	1
16	A092	NEEDLE SET SCREW	1
17	A031	PRESSER REGULATING THUMB SCREW	1
18	W010	PRESSER REGULATING THUMB SET SCREW	1
19	A032	PRESSER BAR SPRING	1
20	B016	NEEDLE BAR SUPPORT	1

21	A021	NEEDLE BAR CONNECTING JOINT SET SCREW	1
22	W015	ZIGZAG CONNECTING ROD	1
23	B099	NEEDLE BAR CONNECTING JOINT PIN	1
24	W066	NEEDLE BAR	1
25	W067	NEEDLE THREAD GUIDE	1
26	W008	NEEDLE	1
27	A036	PRESSER FOOT SET SCREW	1
28	W012	INSIDE PRESSER FOOT	1
29	A035-1	PRESSER BAR	1
30	B028	PRESSER BAR LOWER BUSHING	1
31	W039	PRESSER BAR BARCKET	1
32	A046	PRESSER BAR ACTUATOR GUIDE SCREW	1
33	W043	TENSION RELEASE LEVER DRAG LINK	1
34	D020	TENSION RELEASE LEVER DRAG LINK SET PIN	1
35	W045	TENSION RELEASE LEVER	1
36	B046	TENSION RELEASE LEVER SET SCREW	1
37	W016	ZIGZAG CONNECTING ROD SET BASE	1
38	W065	PRESSER BAR ACTUATOR "CAM"	1
28-1	B043-1	ZIG ZAG PRESSER FOOT	1

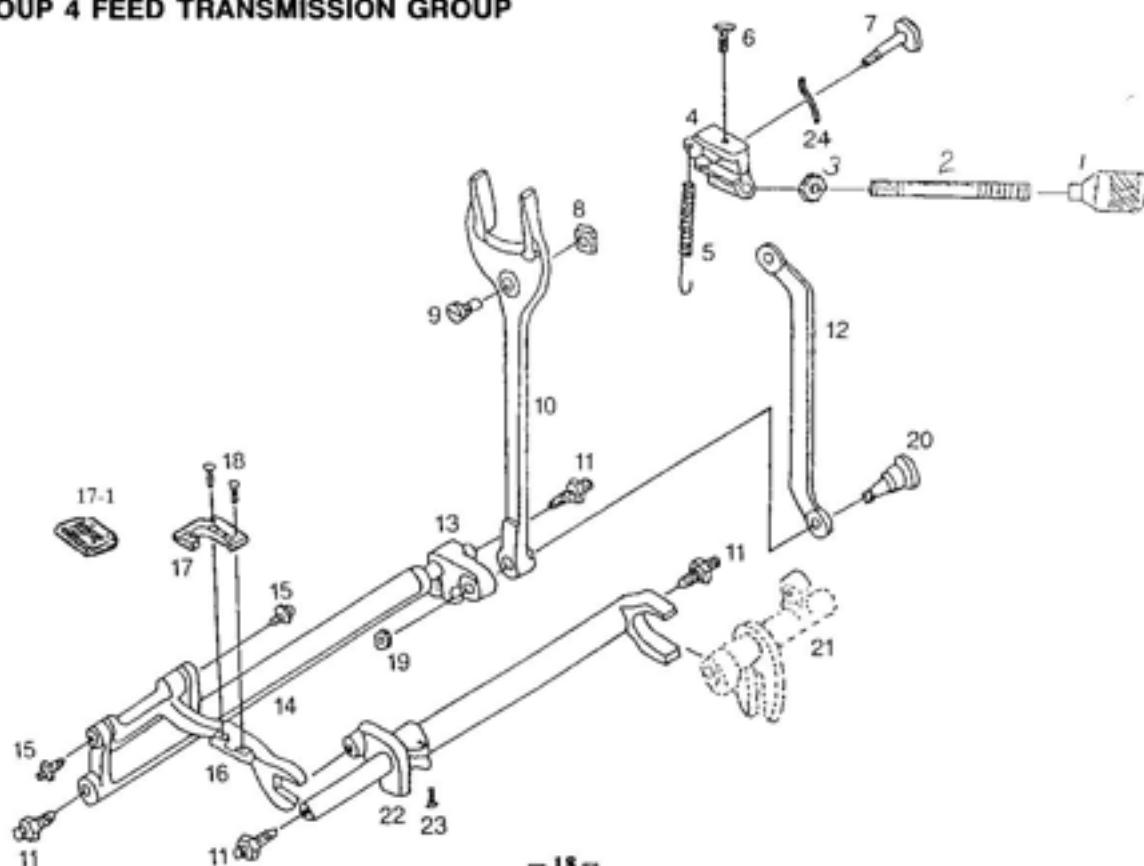
GROUP 3 SHUTTLE TRANSMISSION GROUP



GROUP 3

KEY NO.	PART NO.	PART NAME	Q'TY
1	B139	CRANK CONNECTING ROD	1
2	A027A	CRANK CONNECTING ROD SET SCREW	1
3	A027B	CRANK CONNECTING ROD SET NUT	1
4	A023	OSCILLATING SHAFT SET SCREW & NUT	2
5	A024	OSCILLATING SHAFT	1
6	A018	SHUTTLE DRIVER PIN OSCILLATING SHAFT CRANK SET PIN	1 1
7	A021	OSCILLATING SHAFT CRANK SET SCREW	1
8	B179	OSCILLATING SHAFT CRANK WITH SLIDE BLOCK	1
9	B177	LOWER SHAFT COLLAR	2
10	B155	SHUTTLE RACE GUIDE	1
11	A084	SHUTTLE RACE GUIDE SHAFT	1
12	B153	SHUTTLE RACE GUIDE SHAFT SET SCREW	1
13	B170	SHUTTLE RACE GUIDE SHAFT COMPLETE	1
14	B172	LOWER SHAFT	1
15	W172	SHUTTLE DRIVER	1
16	D099	SHUTTLE HOOK	1
17	A107	BOBBIN	1
18	D100	BOBBIN CASE ASSEMBLY	1
19	B139-2	CRANK CONNECTING ROD CAP SET SCREW	2
20	B177-1	LOWER SHAFT COLLAR SET SCREW	4

GROUP 4 FEED TRANSMISSION GROUP



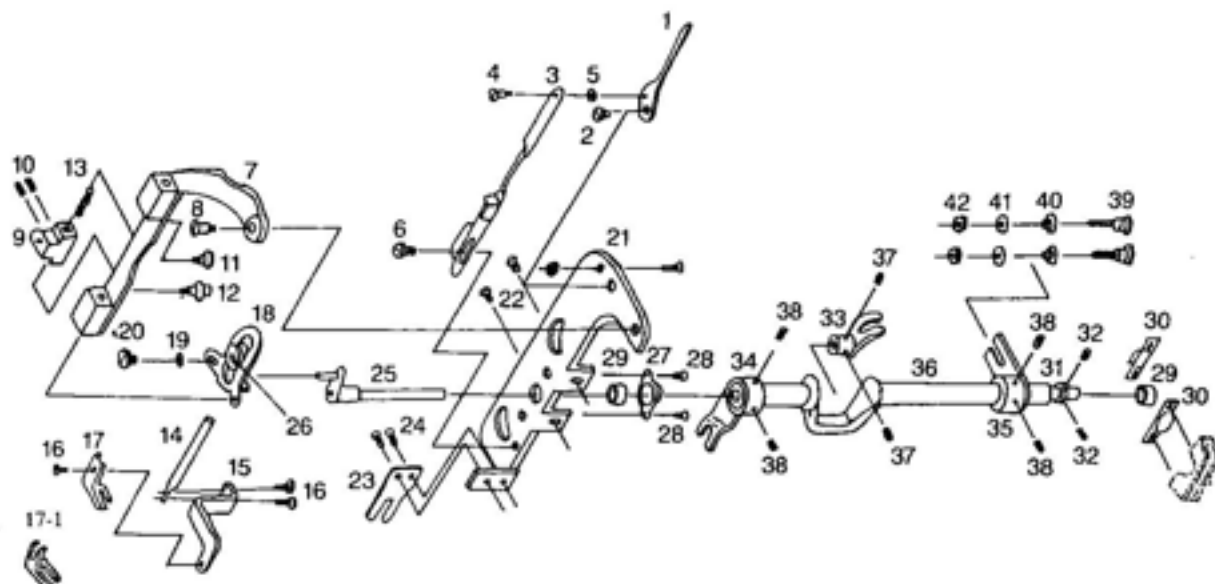
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GROUP 4

KEY NO.	PART NO.	PART NAME	QTY
1	W109	FEED REGULATOR THUMB NUT	1
2	W105	FEED REGULATOR LEVER	1
3	A053B-2	FEED REGULATOR LEVER NUT	1
4	W107	FEED REGULATOR	1
5	W106	FEED REGULATOR SPRING	1
6	B010	FEED REGULATOR SCREW SET SCREW	1
7	W108	FEED REGULATOR SCREW	1
8	A059B	FEED CONNECTION SLIDE BLOCK	1
9	A069A	FEED CONNECTION SLIDE BLOCK STUD	1
10	B103	FORKED ROD	1
11	A023	FEED ROCK SHAFT CENTER SCREW & NUT FEED LIFTING ROCK SHAFT SCREW & NUT	2 2
12	W046	DRIVING CRANK	1
13	A071B	FEED ROCK SHAFT CRANK	1
14	A071A	FEED ROCK SHAFT	1
15	A076	FEED BAR CENTER SCREW & NUT	2
16	A075	FEED BAR	1
17	W011	FEED DOG	1
18	A078	FEED DOG SCREW	2
19	W046-1	DRIVING CRANK GUIDE NUT	1
20	A061	DRIVING CRANK GUIDE SCREW	1
21	A072	FEED LIFTING ROCK SHAFT	1
22	A073	FEED LIFTING ROCK SHAFT CRANK	1
23	A071B-1	FEED ROCK SHAFT CRANK SET SCREW FEED LIFTING ROCK SHAFT CRANK SET SCREW	2
24	A067	FEED REGULATOR SCREW WASHER	1
17-1	W011-1	ZIG ZAG FEED DOG	1

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GROUP 5 DRIVING & REVERSING MECHANISM GROUP



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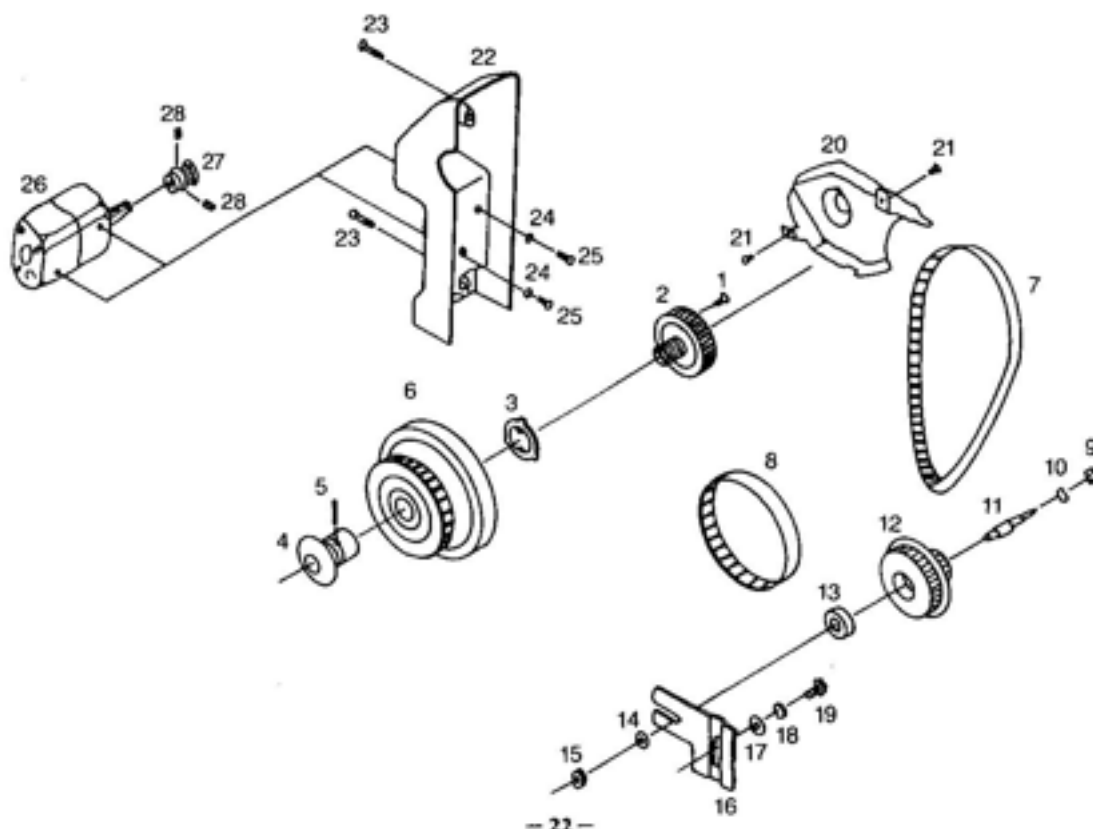
GROUP 5

KEY NO.	PART NO.	PART NAME	QTY
1	W042	PRESSER BAR LIFTER	1
2	W042-3	PRESSER BAR LIFTER HINGE SCREW	1
3	W006	LIFT BAR	1
4	W042-2	UPPER LIFT BAR SCREW	1
5	W042-1	SPACER	1
6	W026-1	LIFT BAR GUIDE SCREW	1
7	W018	PRESSER BAR TRACK	1
8	W018-1	PRESSER BAR TRACK HINGE SCREW	1
9	W020	REAR PRESSER BAR BRACKET	1
10	A029	REAR PRESSER BAR SET SCREW	2
11	W018-2	PRESSER BAR TRACK GUIDE SCREW	1
12	W018-3	PRESSER BAR TRACK FEED STUD	1
13	W019-1	PRESSER BAR LOAD SPRING (REAR)	1
14	W019	REAR PRESSER BAR	1
15	W017	OUTSIDE PRESSER FOOT BRACKET	1
16	B010	OUTSIDE PRESSER FOOT BRACKET SCREW	2
		OUTSIDE PRESSER FOOT SET SCREW	1
17	W013	OUTSIDE PRESSER FOOT	1
18	W024	PRESSER BAR ACTUATOR	1
19	W020-2	FEED SCREW RING	1
20	W020-1	PRESSER BAR ACTUATOR FEED SCREW	1
21	W041	END PLATE	1
22	W041-1	END PLATE SET SCREW	2
23	W014	OUTSIDE PRESSER FOOT BRACKET LIMITATOR	1
24	C097	BRACKET LIMITATOR SET SCREW	2
25	W036	PRESSER BAR FEED ROD	1

26	W024-1	PRESSER BAR ACTUATOR SPACER	1
27	W022	END PLATE BEARING SET PLATE	1
28	W041-2	BEVET	3
29	W021	BEARING BRACKET BUSHING	2
30	W023	LIFT CRANK ROD BEARING BRACKET PLATE	2
31	W052	ROCKER END SET RING	1
32	W052-1	ROCKER SET RING SET SCREW	2
33	W033	PRESSER BAR ACTUATOR UP-DOWN ROCKER	1
34	W034	PRESSER BAR ACTUATOR FEED ROCKER	1
35	W035	CRANK ROD ROCKER	1
36	W053	CRANK ROD	1
37	D097	PRESSER BAR ACTUATOR UP-DOWN ROCKER SET SCREW	2
38	W034-3	CRANK ROD ROCKER SET SCREW PRESSER BAR FEED ROCKER SET SCREW	2 2
39	W046-2	CRANK ROD ROCKER GUIDE SCREW UP-DOWN ROCKER GUIDE SCREW	1 1
40	W046-3	CRANK ROD ROCKER LOCK SPACER UP-DOWN ROCKER LOCK SPACER	1 1
41	W046-4	CRANK ROD ROCKER LOCK WASHER UP-DOWN ROCKER LOCK WASHER	1 1
42	A061-8	CRANK ROD ROCKER LOCK NUT UP-DOWN ROCKER LOCK NUT	1 1
17-1	W013-1	ZIG ZAG OUTSIDE PRESSER FOOT	1

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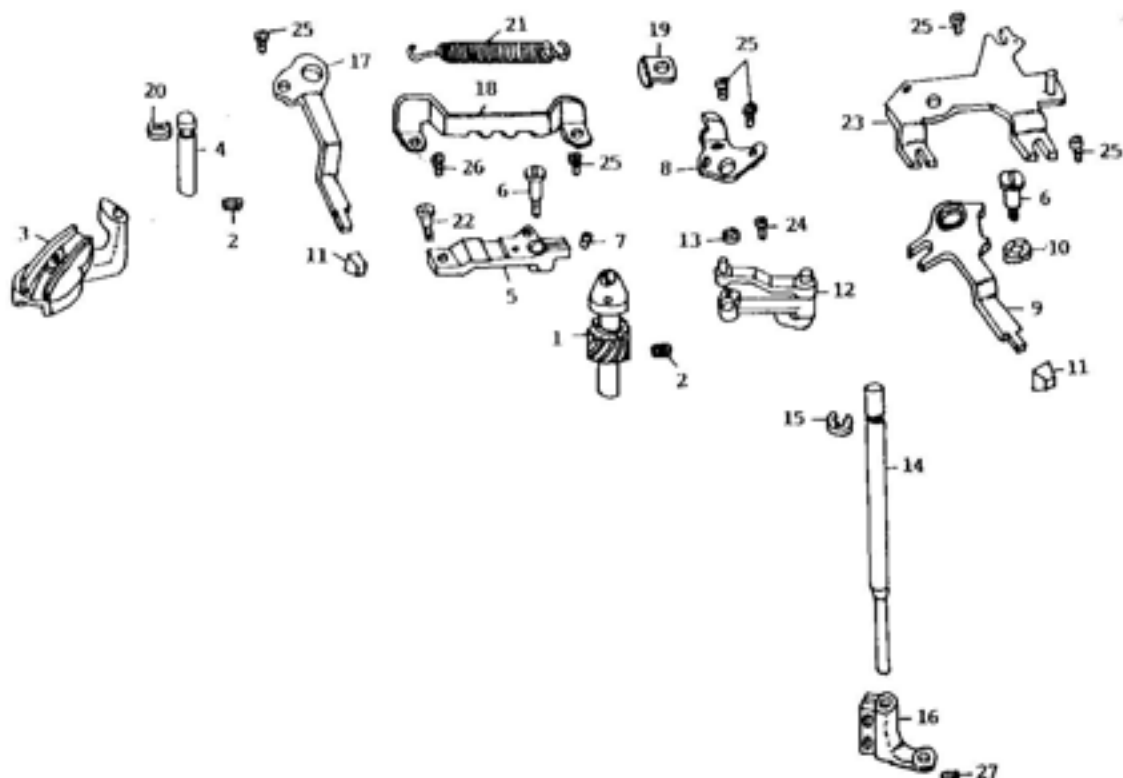
GROUP 6 ELECTRIC POWER & DYNAMIC TRANSMISSION



GROUP 6

KEY NO.	PART NO.	PART NAME	Q'TY
1	A004	STOP MOTION CLAMP STOP SCREW	1
2	A002-1	STOP MOTION CLAMP SCREW	1
3	A005	STOP MOTION CLAMP WASHER	1
4	A003	BLANCE WHEEL BUSHING	1
5	A006	BLANCE WHEEL BUSHING SET PIN	1
6	W060	HAND WHEEL	1
7	W006	BELT (130X1.0.18)	1
8	W007	BELT (80X1.0.25)	1
9	D116	E5 RING	1
10	W061-5	IDLE PULLEY SHAFT WASHER	1
11	W061-1	IDLE PULLEY SHAFT	1
12	W061-3	IDLE PULLEY	1
13	W061-4	IDLE PULLEY BEARING	1
14	W061-6	IDLE PULLEY LOCK WASHER	1
15	W061-2	IDLE PULLEY SET NUT	1
16	W059	PULLEY BRACKET	1
17	LT-2M-4	MOTOR BRACKET SET WASHER	1
18	LT-2M-3	MOTOR BRACKET SET LOCK WASHER	1
19	LT-2M-2	MOTOR BRACKET SET SCREW	1
20	W050	BELT COVER	1
21	A002	BELT COVER SET SCREW	2
22	W049	MOTOR BASE (REAR COVER)	1
23	W049-1	MOTOR BASE SET SCREW	2
24	W049-2	MOTOR SET WASHER	2
25	C097	MOTOR SET SCREW	2
26	W003	MOTOR	1
27	W062-1	MOTOR PULLEY	1
28	D097	MOTOR PULLEY SET SCREW	2

GROUP 7 ZIG ZAG MACHANISM GROUP



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GROUP 7

KEY NO	PART NO.	PART NAME	QTY
1	703	ZIG ZAG CAM & GEAR (ASSEMBLY)	1
2	704	SET SCREW (3) FOR NO. 703, 707	2
3	705-2	NEEDLE DISPLACEMENT REGULATOR (ASSEMBLY)	1
4	707	SHAFT FOR NO. 705-2	1
5	708	ZIG ZAG WIDTH REGULATOR	1
6	709	ZIG ZAG WIDTH REGULATOR PIN (2) FOR NO. 708, M712	2
7	710	SET SCREW FOR NO. 708(1)	1
8	M711	ZIG ZAG CONNECTING PLATE	1
9	M712	ZIG ZAG REGULATING LEVER	1
10	718	SPRING WASHER FOR NO. 709	1
11	D720	ZIG ZAG WIDTH LEVER KNOB (2)	2
12	725	ZIG ZAG CONNECTING LINK SLIDE BLOCK (ASSEMBLY)	1
13	725-7	COLLAR FOR NO. 725	1
14	M726	ZIG ZAG VERTICAL SHAFT	1
15	727	SNAP RING FOR NO. M726 (1)	1
16	728	ZIG ZAG VERTICAL SHAFT ARM	1
17	M729	NEEDLE POSITION COMPLETE LEVER	1
18	M732	CLIK STOPER FOR NO. M729	1
19	M734	NEEDLE POSITION COMPLETE LEVER GUIDE	1
20	741	SNAP RING (2) FOR NO. 707	1
21	N746	SPRING FOR NO. M711	1
22	CT49	ZIG ZAG REGULATING LEVER PIN	1
23	H777	ZIG ZAG CONTROL PLATE	1
24	412-1	SET SCREW FOR NO. 725 (1)	1
25	154	SET SCREW FOR NO. M711(2), M729(1), M732(1), N747(1), H777(2)	7
26	110-1	SET SCREW FOR NO. M732(1)	1
27	402	SET SCREW FOR NO. 728(1)	1

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BASE PLATE & WORKING PLATE

